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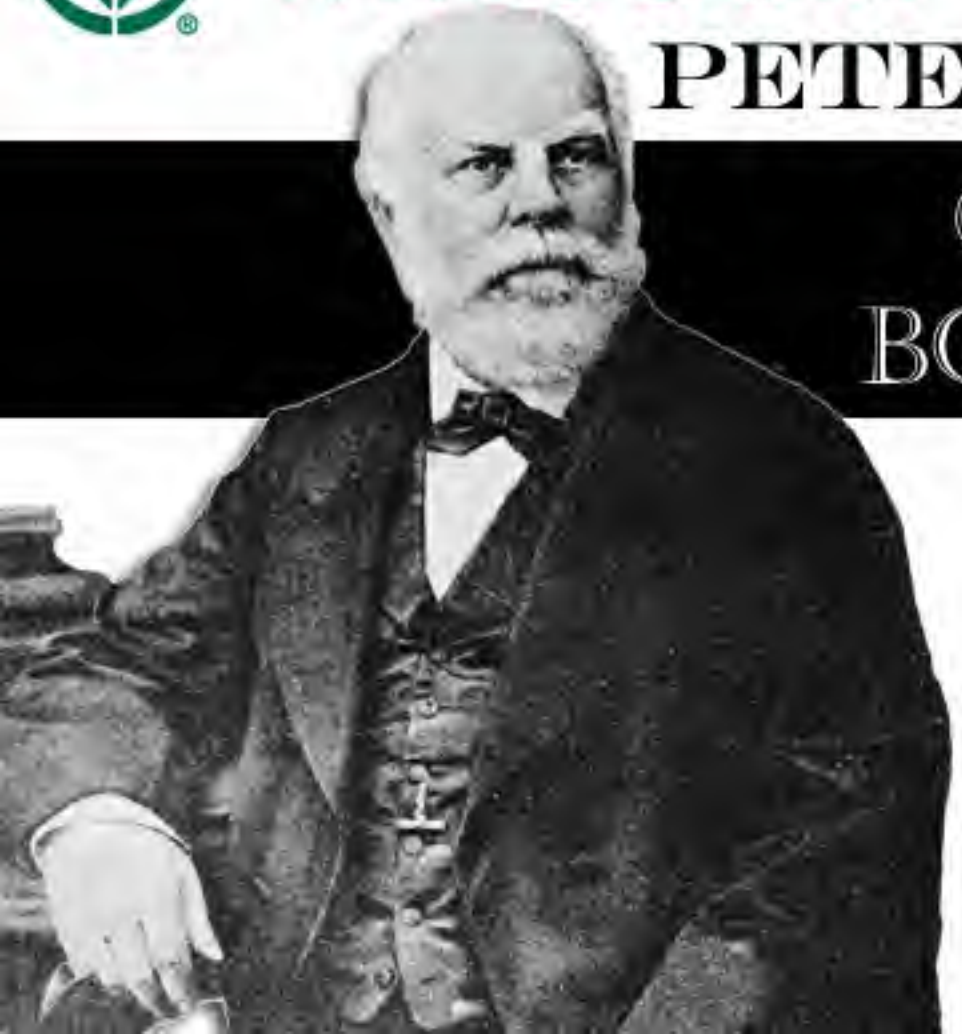
Peter H. Raven Library

George Engelmann Botanical Notebooks



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5 tab

14.15.

P. Koraiensis

P. Mandschurica

74-8

0 1 2 3 4 5 6 7 8 9 10
cm
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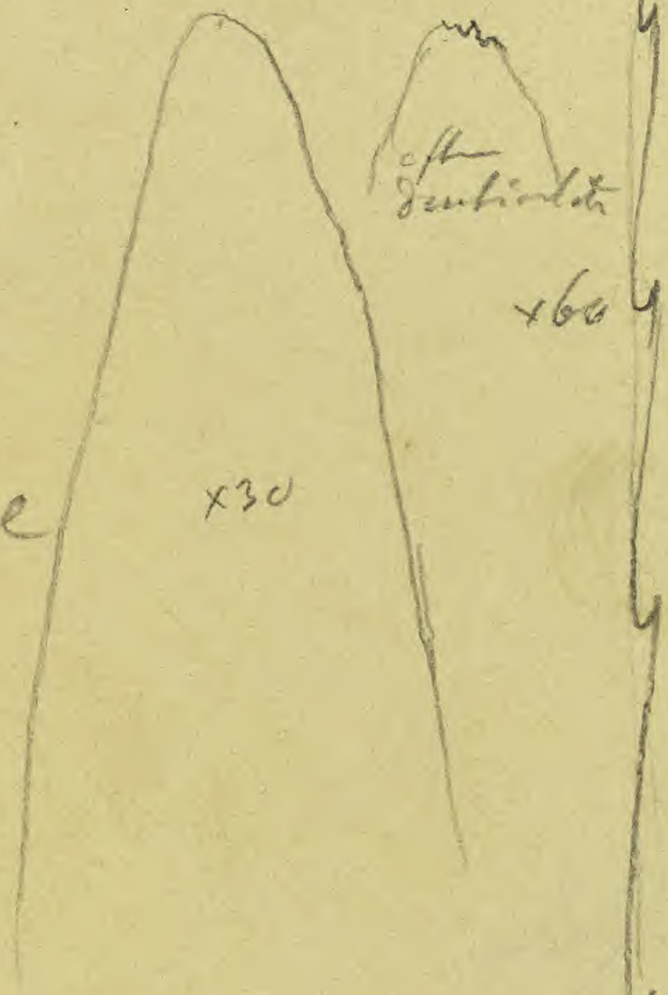
Pin Koraiensis Sieb & Zucc.

Manschuria, Maximowicz

May 5th 1878

3 ducts parenchymatous
no hypoderm cells at all



ducts of Cambium
Cells with stout teeth

Folia filiformi-terna
Semina aptera -- cotyl 11-13
(Zuccarini)

See Parlat. p. 404

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P. Koraiensis

May 24 1877

Japan, cult. Maximowicz

I can discover no hypoderm cells at all

seed in HB Kew from Japan, supposed to be P. Koraiensis

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Cor. 5th and Walnut St

MASTBROOK'S PHARMACY

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PURE WINES AND LIQUORS FOR MEDICAL USE.

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Linn 12 1878

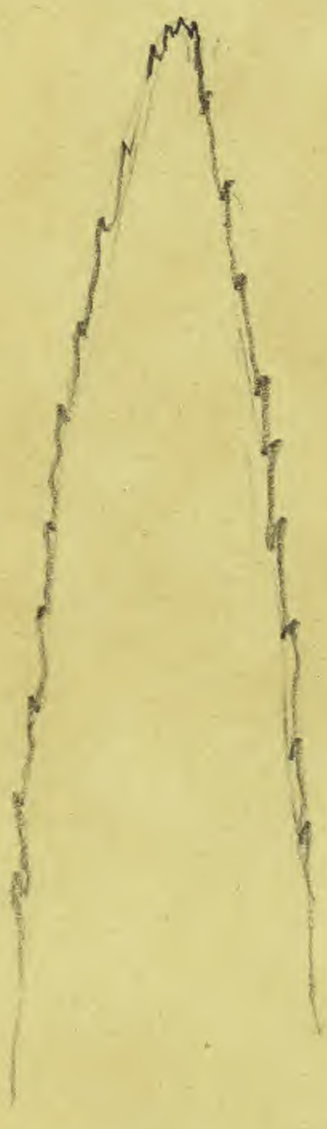
Pinus Mandschurica

A. Rupr. Amur 1859

nonstomatic Rd

2 × 5 – 7 series

above



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Leitch & Corlies

DRUGGISTS

South West Corner Fifth and Market Streets.

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Pia Mandshenica

Hort Hooper July 1878

× 30

× 60

T. HORTSLEY
DAKOTA
B

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ARTHUR T. HOLLISTER,

Druggist,

301 South Fifth, S. W. Cor. 5th & Myrtle, St. Louis, Mo.

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2 Lab

36

P. Arjonira

19-100

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Pinus Arizonica

June 1st 1881

Purple cone, Santa Rita Mts
May 1881

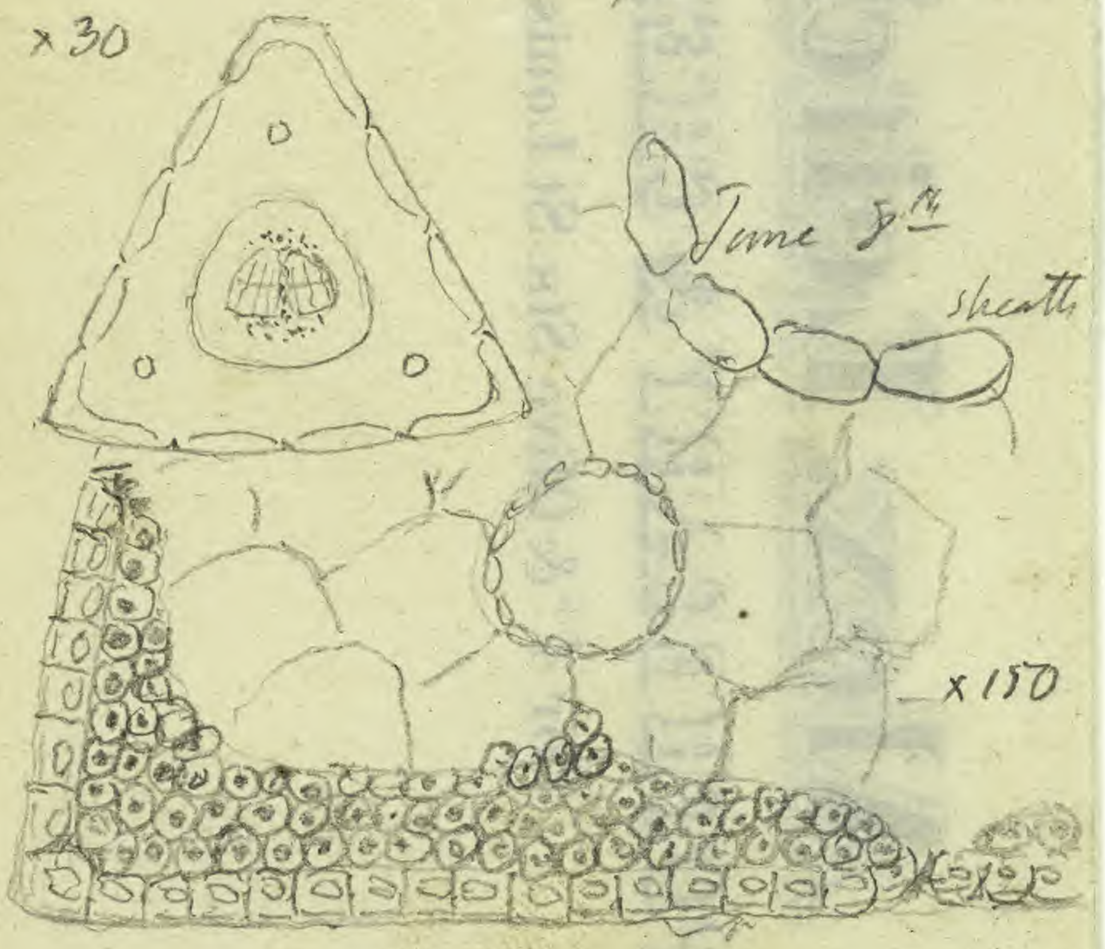
13
21

Pollen

33 - 36.6 / 315 mm = 0.079 - 0.088
mostly about 0.085 mm

5 ∝ R spirals most prominent

×30



Vane 5th

sheath

×150

×4

12 involucral bracts, outer nearly ½ length of inner, all others of about equal length

posterior view

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Alex. Leitch,

APOTHECARY & CHEMIST,

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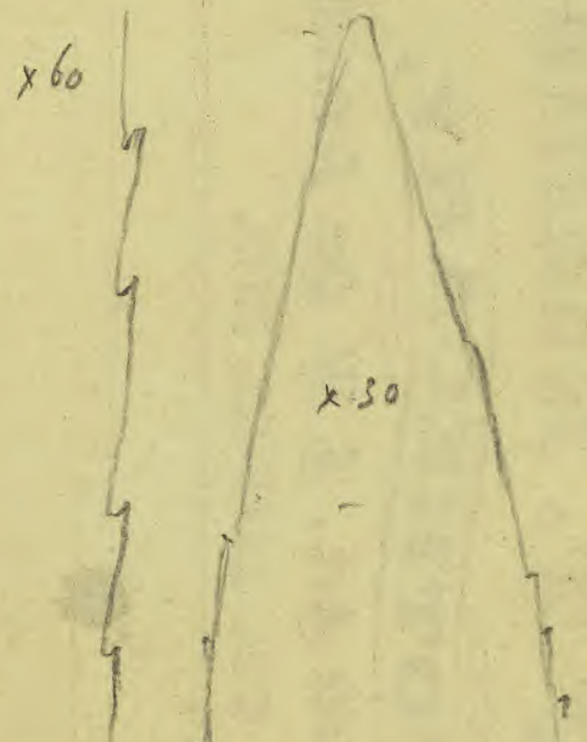
Pinus Arizonica var. ? Apr 23 1878

Sclerum, Rothrock 652, Santa Rita, Arizona 1874

leaf 1.1 wide
(1 – 1⅓ mm)

3 bundles sheath
4 on back



strong hypoderm development every where under epiderm and above and below the bundles of vessels, bark none or scarcely any or very sparing (± different leaves) around the duct

4–5 series of stomata on back
3–4 on each side
sheath young over 1 inch, old less than ½ inch long

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11+6

37

P. leiophylla

101-111

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Pinus leiophylla var
San Jose del Oro, Mexico, Chrenberg N. 618 = H. Berolin

April 7 1871

Leaves 3-4 in a sheath
Conv. 0.8 mm dia

x30 x30 x60

x30

x30

x150

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Pinus leiophylla

between Mexico & Lerma Dr Gregg *April 26 1849 N. 689 b*

April 8 1871

×30 ×30 ×60 ×150

×30

most leaves 3 *to a sheath*

×30

fol. 0.9 – 1.1 mm diam

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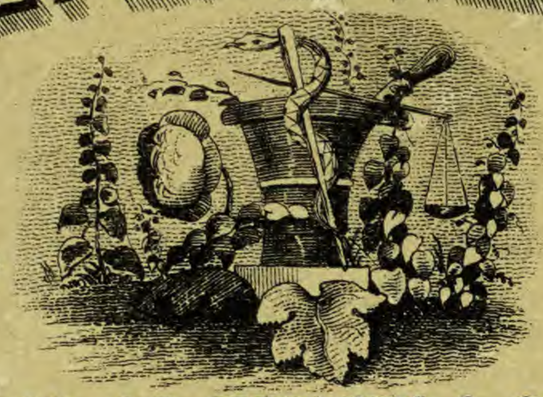
EDWIN R. SWAIN & Co.



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S. W. CORNER OF TWELFTH & OLIVE STREETS,

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ST LOUIS, Mo

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Pinus leiophylla var
vaginis magis persistentibus
Angangeo? *Hartweg N. 441*

April 8 1871
fol 5 7/12 6 poll
in H6 *1.2 mm dia*

×30 ×30 ×60

×30

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"P. leiophylla"

Hartweg 441 ex HG Berlin

June 21 1878

about 5 rows of
stomata on each side
above
8 rows on back

Hypodermis small and
in small patches of a few
scattered cells Epidermis
a little more : the angles
no tubes seen

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P. Candollana Royle
at Ciopkyll, Parbat

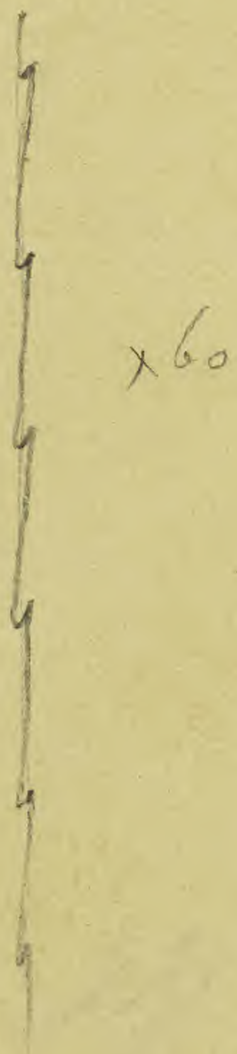
June 21 1878

×30

Ducts indistinct, often not visible

hypoder with sheath all round

no Ducts



×60

24 + 5 series of stom on upper
6 – Lower side

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